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ABSTRACT

A field experiment tested the effects of mediation, message difficulty and gender of message presenter on children's attention to messages. Seventy-seven children, ages 6 weeks to 5 years participated in the study. Children were observed as they watched messages delivered by a person either in real life or on television. Results indicated that except for infants, children paid more attention to men than to women overall, and to messages presented in person rather than mediated. Children paid more attention to women however, than to men, if a message was difficult both for real and for mediated messages, and even more so for mediated messages. The study underscores the need to study the interactive effects on children of all dimensions of messages (structural, mediation, and content). Three tables and 6 figures are included; 24 references are attached.) (Author/PRA)

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Three Dimensions of Children's Attention to Messages: Mediation, Content, and Structure

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Three Dimensions of Children's Attention to Messages: Mediation, Content, and Structure

A field experiment (N=78) with subjects six weeks to five years of age tests effects of mediation, message difficulty and gender of message presenter on children's attention to messages. Except for infants, children paid more attention to men than to women overall and to messages presented in person rather than mediated. Children paid more attention to women than to men if a message was difficult both for real and for mediated messages, but even more so for mediated messages.

Three Dimensions of Children's Attention to Messages: Mediation, Content, and Structure

In response to much concern about the effects resulting from the amount of time children spend watching television, researchers often ask what types of messages children receive from television, and what the effects of those messages are on the child's behavior and on the child's ability to think and to learn. Most of this research has focused on how certain types of content (violent, educational, or commercial content for example) affect what children know or how they behave (Roberts & Bachen, 1981). Does violent television content result in aggressive behavior (e.g., Josephson, 1987)? Do vast quantities of commercials result in acquisitiveness and family conflict (e.g., McLeod et al., 1982)? Does educational television teach (e.g., Ball & Bogatz, 1970)? Is prosocial television effective in modifying behavior (e.g., Rushton, et al., 1982)?

Less research exists to investigate how structural aspects of the television stimulus affect children's attention to the message, their processing of the message, and even their abilities to process the message. Within the last ten years, however, interest in this areas has grown, and scholars have begun to examine the effects of message structure. Salomon (1979), for example, has investigated how children learn to decode the video grammar and structure of a television message.

Anderson and colleagues (e.g., Anderson & Lorch, 1983) and Huston & Wright (1983), among others, have asked what aspects of the structure of television encourage children to pay attention. Questions now include which video techniques help children to learn from TV and which may inhibit learning.

Even less research exists on how children might approach and process "television messages" differently from "real messages." Does a televised message attract more or less attention than a real message? Does that change with age? Do children process and remember televised messages differently from non-mediated or "real" messages? If the content remains constant, will real and televised messages have the same effects? These questions so far have eluded investigation.

The tendency of researchers to focus on the content of the message, rather than on the mediation or structure of the message, seems to be based on the increasingly rejected assumption that television exerts few effects independent of its content. Certainly the content of the message may contribute major causal factors determining the effects of that message, but information processing theories tell us that other aspects of the message may hold important implications as well. If certain structural features help to drive attentional processes, for example, they may help or prevent the content of a message from "getting through" to a child. In this study, therefore, we try to assess independently how single aspects of each of these three

dimensions of a message--mediation, structure, and content--affects how much attention young children pay to a message.

Mediation

Virtually no research compares the effects of real stimuli against televised stimuli. More specifically, no research of which we are aware tests the effects on children of identical messages presented in a mediated and an unmediated form. To the extent that "the medium is the message" (McLuhan, 1964) one may assume that a message delivered by a live person standing in the room with you will require different processing strategies than will a message presented by a person on the a television set. Indeed, research on attention to television suggests that to some extent attention is driven by the structural features of the medium (Anderson & Lorch, 1983). Content onsets, camera movement, cuts, edits, and character movement, for example, all elicit orienting responses (attention) in television viewers (Alwitt, Anderson, Lorch & Levin, 1980; Anderson & Levin, 1976; Anderson, Levin & Lorch, 1977; Anderson & Lorch, 1983; Huston & Wright, 1983).

A "real" message, meanwhile, includes a different set of structural features. The medium of reality does not include cuts and zooms and pans, but it does include the possibility for visual and physical interaction. As a result, if the medium is the message, we can predict that patterns of attention to "real" stimuli will differ from attention to televised stimuli, though

too little previous work exists in this area for us to knowledgeably predict how it will differ. We present a research question for testing, then, rather than a formal hypothesis:

Research Question 1. Does mediation affect how much attention children pay to the message?

We can test this by presenting identical messages to children either on television (mediated) or as real "live" messages (non-mediated).

Structure

Some research indicates how the structure of televised messages affects how children's attention to and learning from television. Huston-Stein and her colleagues, and Anderson and his colleagues both have examined how children look at television. They have found that many structural aspects of television (or formal features) elicit looks from inattentive children, while others terminate looks from previously attentive children. In this research they have examined many structural aspects of Sesame Street such as music, puppets, funny voices, camera techniques, and special effects. For example, the presence of children, puppets and unusual voices tended to attract attention, while extended zooms and pans, eye contact and stills depressed attention (Alwitt et al., 1980; Anderson & Levin, 1976). One particularly interesting result of this work is the finding that women and women's voices elicit looks, while men and men's voices terminate looks (Alwitt et al., 1980;

Anderson & Levin, 1976). This finding has not found fully consistent support in the various studies: Alwitt et al. found that black men attracted attention, while white men and male voices lost attention. Black women and women's voices attracted attention, but white women had neither a positive nor a negative effect on attention. Anderson & Levin previously had reported much more straight-forward gender differences. To our knowledge, no further investigation of gender differences exists, and no satisfactory explanations for the findings from these studies have been tested. As a result, we selected gender of speaker as the structural feature of the message to investigate in this study. The research question was:

Research Question 2. Does the gender of the stimulus person affect how much attention children pay to the stimulus?

It seemed reasonable to expect that attention to gender might interact with the gender of the viewer, so we also asked:

Research Question 3. Do boys and girls pay different amounts of attention to the stimulus?

Further, if the structure of real and mediated messages differentially affect children's attention, than any one structural feature might exert different effects depending on the mediation of the message. This gave rise to our fourth research question:

Research Question 4. Does the gender of the stimulus person have different effects on children's attention when the message is

"real" than it does when the message is on television?

To investigate these questions we presented the children with messages with identical content, on television and in real life, delivered by both male and female speakers.

Content

In light of the concern reflected in most media effects studies concerning the effects of television message content, we also believed it important to test a content variable. Anderson's research has shown that, to some extent, comprehensibility of the message drives attention (Anderson, Lorch, Field & Sanders, 1981; Anderson & Lorch, 1983; Anderson & Collins, 1988; Pingree, 1986). Children tend to pay attention to comprehensible messages and to stop paying attention to messages which are not comprehensible. Our fifth research question, as a result, inquires:

Research Question 5. Does the difficulty of the message affect how much attention children pay to the message?

We assumed that to some extent comprehensibility or difficulty of the message would be affected by the age of the child. Much of Collins's work, for example, has centered on children's abilities to understand various aspects of messages at different ages (e.g., Collins, 1983). Much evidence exists to show that children's cognitive abilities develop with age and experience, and researchers continue to investigate the implications of these changes for the interpretation of

television messages (e.g., Dorr, 1983; Dorr, 1980; Christenson, 1983; Worth & Gross, 1974).

Among other interesting findings, Collins has shown that certain aspects of messages that would confuse older children (such as the logical ordering or elements in a plot) do not affect younger children, presumably because those aspects of a message are not yet relevant to the younger child. A child too young to follow even a logically presented plot will not find a randomly ordered sequence of events any more confusing. Anderson & Lorch (1983), however, found that random ordering of a plot sequence bothered even two-year-old children, although it affected them less than it affected older children. This leads to the question:

Research Question 6. Is the effect of message difficulty on children's attention different for older children than it is for younger children?

Finally, because the television-viewing experience includes so many variables simultaneously, we can therefore presume none will affect children in a vacuum exclusive from the others. We must ask, therefore, how the structural, mediation, and content variables might interact with each other to affect attention as well as with individual differences in the children such as age and gender. For example, Alwitt et al. have suggested that children may pay more attention to women at a younger age and to men at an older age, because the voices may predict the type of

content found in a message. More specifically, they have suggested that men's voices are "ubiquitous on television and may, on the whole, be predictive of content not meant for children. Men's voices are probably far more predictive of abstract, adult-oriented topics than women's voices, children's voices or peculiar voices are" (Alwitt et al., 1980. p. 65). From this argument it follows that patterns of attention to formal features are, to a certain extent, learned responses. Children eventually learn that "men say the important things" on television. Thus, children learn to pay attention to MEN (structural feature), on TV (mediated), when watching ADULT-ORIENTED programs such as news (content). If this is the case, it suggests that these variables do interact with one another. Young children may show a different pattern of attention than older children, and different content types may elicit different attention patterns, with different gender speakers and different types of mediation. This leads to our final two research questions:

Research Question 7. How do difficulty of message, mediation of message, and gender of speaker interact with one another to affect children's attention to a message?

Research Question 8. How do difficulty, mediation, and gender of speaker interact with age and gender of the child to affect the child's attention to a message?

METHODS

In order to answer these research questions we designed a field experiment. We felt that since much of the work on children's attention to television had been done in the lab, it was time to watch children watching television in the real world complete with its myriad distractions and alternative occupations.

Subjects

Subjects in the field experiment were 77 children aged 6 weeks to 5 years in two local child care centers. The children were divided among four classrooms in the two daycares. Daycare 1: the children who participated in this study were in two rooms. One room contained 10 infants, the other room 12 one year olds. Daycare 2: Classroom one contained 20 children age 2. Classroom 3 included 40 children ages 3-5. In order to measure their attention to the messages, we videotaped the children for coding of "eyes on screen."

Parents completed questionnaires to indicate demographic and background factors, including how much TV the children watched and who their primary care givers were. Characteristics of the sample may be found in Table 1. The results reflected the

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Table 1 About Here

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idiosyncrasies of a university town population, with 38% of the

mothers and 63% of the fathers having some graduate education. The majority of the sample (83%) was low to lower-middle income, according to self reports, and the sample was primarily white (70%). Results also indicated that the mother tended to be the primary caretaker, but most children (77%) felt equally comfortable around men and women.

Messages

The messages were designed so that they could be delivered by a person either in real life or on television. The televised messages were videotaped against a blank background using a talking head format. The "real" messages were delivered in the day care centers by "real" people. Each message was videotaped by a male and a female speaker.

To control for message-specific effects, messages were developed for four categories of messages that a child might encounter on television: poetry, how to, weather, and story. Each message category had a simple version and a hard version. In the simple version the words were easy and the sentences short. The target audience was very young children, just learning to talk. In the hard version, the messages were geared towards college students. The vocabulary was extensive and sentence structure complex. The type of message (such as poetry), however, did not change. Examples of hard and easy messages can be found in Table 2.

Table 2 About Here

This design required four categories of message, with a simple and hard version in each category, delivered by both a male and a female, both in person and on television. This resulted in a total of 32 messages to be shown to the children.

To do this we set up a 19" color television hooked up to a VCR, with two Panasonic camcorders mounted on top of the television in each room used in each daycare. The camcorders videotaped the children while the VCR played the messages. One message was presented every 15 minutes for four hours on a Thursday and four hours on the following Friday. The equipment was set up over the previous weekend and was present in the classroom Monday through Wednesday to accustom the children to its presence.

Two different orders of presentation were created, and the messages were presented in different orders in different classrooms, to control for order effects. In addition, within each order the 32 messages were counterbalanced for difficulty, gender of speaker, mediation condition, and topic. The message orders are presented in Table 3.

Table 3 About Here

The stimulus tapes were prepared so that the mediated messages were edited into black tape whenever they were supposed to appear. The stimulus tapes were started at the appropriate times and ran for two hours at a time. In most of the rooms this was two hours in the morning and two hours in the afternoon. The schedule was agreed upon with the child care workers so as not to interrupt scheduled activities, meals and naps.

The nonmediated messages were presented at the scheduled times by real people. The "real" speaker arrived at the child care center and at the scheduled time a research coordinator, present during the entire data collection process, had them present the real message. The "real" stimulus person then walked into the room and sat in front of the television screen, directly below the camcorders, to present the message. When finished, the presenter left the room. The "real" people were instructed not to interact with the children to prevent any confounding of mediation with feedback between the speaker and the children.

Dependent Variable

The dependent variable, attention, was measured both quantitatively and qualitatively. The quantitative measure was the number of seconds children had their eyes on the television screen. After all the data were collected, coders viewed the videotapes of the children, using stopwatches to measure, for each child, for each message, the number of seconds the child watched.

The qualitative measure was a judgement made by the coder, at the time of the coding, for each message, for each child, on a three-point scale, of how much attention the child was paying to the message, coders were able to consider behavior besides eyes on screen in this judgement. This was done because of the real world aspect of the design. A child who was paying attention to a message might, for example look away from the message to mimic the speaker, or ask a teacher about what was in the message. While this would indicate attention to the message, it also would reduce the quantitative measure of attention. Inter-coder reliability checks were done randomly by at least two coders.

Problems

The original design of this field experiment was a mixed 2 (Order) X 2 (Mediated) X 2 (Gender) X 2 (Difficulty) X 4 (Topic/repetitions). Due to missing data resulting from the field experiment setting, however, we did not end up with enough data to carry out the designed analysis. The advantage of doing a field experiment was gaining a natural setting in which results could be argued to represent how children actually attend to television in a real environment. On the other hand, we suffered an enormous amount of missing data as a result of real world data collection problems. In one child care center a couple of stimulus messages were not delivered due to a blizzard which prevented our "real" people from arriving. We lost two mediated messages in another center because a child turned off the

television when the research coordinator was not looking. Data often were missing because individual children were outside, or in the bathroom, or sleeping during a message. Finally, in one center, an unscheduled field trip took place resulting in the presentation of one hour of messages to an empty room. Further, because data collection took place over two days, some children were absent on one of the days or left early or came late.

As a result of these and other problems, the amount of missing data was too great to compensate by replacing missing data with means, or by throwing out cases with missing data, since virtually ALL children had data missing for one or more (usually more) of the 32 messages.

Therefore, instead of analyzing the data by child, as we originally had planned, we analyzed the data by message. This resulted in 454 cases of usable data. Each line of data consists of the number of seconds the child viewed the message, the qualitative judgement of the child's attention, the topic of the message, gender of speaker, difficulty of message, mediation condition, the gender of the child viewing, and the age of the child viewing. We then analyzed these data as a between-subjects design with unequal groups.

In other words, we have lost the power of a within subjects analysis. As a result of this, our results must be considered preliminary. It is highly unlikely, however, that anything found significant in this analysis would fail to achieve significance

in the correct analysis, since our original analysis plan would have been much more powerful. The results that appear significant in this analysis, then, are likely to be quite strong. Null findings must be viewed with caution and tested in future research; we cannot assume they do not exist. For these reasons, and because this is a relatively new research area, significance will be reported at the $p<.10$ level.

The final analysis was done as a between subjects 2 (Order) X 2 (Mediation) X 2 (Difficulty) X 2 (Gender) X 4 (Topic) X 2 (Gender of Child) X 4 (Age of Child). The analysis was run on both the qualitative and quantitative measures. In the results the qualitative measure will be called involvement and the quantitative measure will be called attention. Because of the reasons outlined above, this violates the assumption that each data point is random and independent from the others. While ANOVA is robust to violation of this assumption, it should be kept in mind (Jennings et al., 1973). Table 4 shows the final breakdown of messages in each group.

Table 4 About Here

RESULTS

Research Question 1: Does mediation affect how much attention children pay to a message?

This question was tested by looking at the main effect of

the mediation factor on either the involvement or the attention data. In neither case was there a significant main effect for mediation.

Research Question 2: Does the gender of the speaker affect how much attention children pay to the message?

This was tested by looking at the main effect for gender of speaker. This was significant in the attention analysis ($F(1,370)=3.50$, $p<.0621$) and is shown in Figure 1. Generally, children pay more attention to men then to women.

Figure 1 About Here

Research Question 3: Do boys and girls pay different amounts of attention to the stimulus?

This was tested by the main effect for gender of child, which was significant in the attention analysis ($F(1,370)=3.99$, $p<.0466$) and is shown in Figure 2. Generally, girls watch more than boys. There was no interaction of gender of child with gender of speaker.

Figure 2 About Here

Research Question 4. Does the gender of the stimulus person have different effects on children's attention when the message is "real" than it does when the message is on television?

The interaction between gender of speaker and mediation of message was not significant.

Research Question 5. Does the difficulty of the message affect how much attention children pay to the message?

This question was tested by the main effect for Difficulty, which was not significant.

Research Question 6. Is the effect of message difficulty on children's attention different for older children than it is for younger children?

This question was tested by the Age X Difficulty interaction, which was not significant.

Research Question 7. How do difficulty of message, mediation of message, and gender of speaker interact with one another to affect children's attention to a message?

Two interpretable and interesting interactions were found in the data. First a significant Gender of Speaker X Difficulty interaction was found in both the attention ($F(1,370)=19.46$, $p<.0001$) and the involvement ($F(1,353)=12.10$, $p<.0006$) data. These are shown in Figures 3a and 3b. This shows that when

messages are easy children pay attention to men, but when messages are difficult they pay attention to women.

Figures 3a and 3b About Here

Second a significant Mediation X Difficulty X Gender of Speaker interaction was found in the attention ($F(1,370)=3.33$, $p<.0775$) and in the involvement ($F(1,353)=6.59$, $p<.0107$) data and is shown in Figures 4a and 4b. This shows again that when

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~~Figures 4a and 4b About Here~~

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messages are easy children attend to men, and when they are difficult they attend to women, and further, that this difference is much greater for mediated messages. In other words, on TV if the message is easy, children attend to males, but if the message is hard they attend to females.

Research Question 8. How do difficulty, mediation, and gender of speaker interact with age and gender of the child to affect the child's attention to a message?

There were two significant interactions between individual difference variables and the independent variables. First, there was a significant Age of Child X Gender of Speaker interaction ($F(3,353)=2.46$, $p<.0624$). This is shown in Figure 5. This

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Figure 5 About Here

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interaction shows that infants pay more attention to women than to men while all other age groups pay more attention to men than to women. This is true even though no significant main effect exists for speaker gender.

Second, there was a significant ($F(3,353)=2.68$, $p<.0473$) Age X Mediation interaction for the involvement data which is shown in Figure 6. This shows that infants (children under 1) showed

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Figure 6 About Here

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much greater attention to mediated stimuli than they did to real stimuli, while five year olds showed much greater attention to real stimuli than they did to mediated stimuli. The two to four year olds show no significant differences between attention to real and mediated stimuli.

DISCUSSION

We find these results interesting for a number of reasons. First, it is noteworthy that few significant effects emerged for the mediation factor. This suggests that these young children approach the televised messages in much the same way they approach real messages. To the extent that mediation affects attention, the medium of television seems to magnify, as opposed

to alter, effects already there.

Second, these results contradict what little previous research exists. Based on Anderson's work, we expected to find greater attention to women than men, but instead we found greater attention to men when the messages were easy and to women when the message was hard, particularly when the message was mediated.

One possibility for the differing findings is that the results are not truly contradictory. If we assume that the children in Anderson's studies watched women, and not men, because the messages were difficult for them, no contradiction would exist. Anderson and colleagues, however, have reported on the effects of varying difficulty of a message, which would indicate that the messages viewed by children in those studies were not constant in difficulty level.

Another possible explanation lies in the difference between a field experiment and a lab experiment. In Anderson and colleagues' studies, the children were not in their normal environment. If we assume that the children's primary caregivers were women, they may have turned to the more familiar type of adult in a unfamiliar situation. In other words, they may have watched women because women were perceived as less threatening in a strange situation. In the current study, however, the children were in their own child care center, with normal activities carried on as usual. Our data showed that older children were more likely to look at men. This alone does not explain,

however, why the older children watched women when the message was difficult, or why this result was more pronounced when the messages were on television.

A third interesting result of this study was an unexpected interaction of gender and difficulty. Why might children look at men for easy messages and women for hard messages? Further, does the same bias continue into adulthood or do we outgrow it? One possible explanation is developmental. Newborns have an attention bias towards women's faces and high pitched voices (Fernald, 1985; Fernald & Kuhl, 1987; Sullivan & Horowitz, 1983). As they grow they pay more and more attention to men. Possibly, this bias means that children find it somewhat easier to pay attention to women and harder to pay attention to men. Thus, when the message is easy, less processing capacity is required by the message, so a child can expend extra energy to process the male speaker. When the message is difficult, however, the additional task of processing a male speaker results in an overload, resulting in the termination of attention.

This would parallel findings on other television structural features. Lang and Thorson (1989; Lang, 1990), for example, have demonstrated (with adults) that when messages are easy structural features, such as cuts and edits and video graphics, increase attention to and memory for messages. But, when the messages are hard, formal features decrease memory and attention for the message.

Another possible explanation for these results is that children's attention is in fact driven by the same things that drive adults' attention: novelty and signal content. Adults orient to new things in the environment and to stimuli that have been learned to be signals (Graham, 1979). If we make this assumption about children, then we can explain some of these results by arguing that children attend to what is most novel.

First, only the infants paid more attention to the mediated stimuli than to the real stimuli. It seems likely that most sub-one year olds find TV more novel than real people. These infants spend eight hours a day in a daycare environment that has no TV and most people (see survey data) do not put their infants in front of a TV. So infants found mediation novel, real people not. All other age groups, however, would no longer find television a novelty, so the real person would attract more attention.

Second, our children generally paid more attention to men. Again we must remember these are daycare children. While all the centers tried to get male teachers and had at least one, most of the teachers were women. Further 21% of our sample had single-parent households, and 66% said that the mother was the primary care giver, suggesting that in fact men (especially at daycare) were more novel.

Third, it is possible that women more likely talk babytalk to children and use simple words and sentence structure as

suggested by some of the research on motherese (Fernald, 1985; Fernald & Kuhl, 1987; Sullivan & Horowitz, 1983). This would mean that women delivering difficult messages would seem more novel than men delivering difficult messages, while men speaking simple messages would seem more novel than women speaking simple messages. Future research needs to replicate these findings to explain why these biases might exist.

This study also underscores the need to study the interactive effects on children of all dimensions of messages (structural, mediation, and content). Each dimension may interact with developmental variables, with the other dimensions, and with other media variables to affect all aspects of children's processing. Indeed, social cognitive theory holds that personal variables (such as cognitive abilities), environmental variables (such as family structure) and behavioral variables (such as watching television and communicating with real people in real life) continually and reciprocally affect one another (Bandura, 1986). Because the within-subjects analysis was not possible to carry out for this study, we cannot offer empirical support for our explanations of possible interactions of various behavioral variables (the implications for attention of various aspects of a message) with environmental variables (such as primary caretaker) and personal characteristics (age). We offer post-hoc surmises instead.

In addition, we looked only at attention and involvement,

saying nothing about how the varying levels of attention might affect learning or behavior. The implications, however, are numerous. For example, the results of this study suggest that children pay the most attention to men delivering simple messages and women delivering hard messages on television. If this elevated attention translates into greater learning, this information can help us develop better instructional television.

Finally, we looked at only one aspect of structure (gender of speaker), only one aspect of content (difficulty), and only one type of mediation (television). Clearly, we could investigate many different structural and content variables with different types of media. It is not so much the specific effects of the specific variables found in this study that are important, but rather the exciting implication that content, structure, and media interact with one another to change the way the message is processed and that, by manipulating these dimensions of messages, we can increase or decrease attention, learning, and the effects of messages.

As a result, we conclude from this study that the words are not the message, the medium is not the message, and the structure is not the message. Rather, the combination of content, structure, and media is the message, and the effects of that message exist only in the context of the complicated ballet of environment, person and behavior.

References

Alwitt, E., Anderson, D. R., Lorch, E. P., & Levin, S. R. (1980). Preschool children's visual attention to attributes of television. Human Communication Research, 7, 52-67.

Anderson, D. R., & Collins, P. A. (1988). The Impact on Children's Education: Television's Influence on Cognative Development, pp. 15-33.

Anderson, D.R. and Levin, S.R. (1976) Young children's attention to Sesame Street. Child Development, pp.806-811.

Anderson, D.R., Levin, S.R., and Lorch, E.P. (1977) The effects of TV program pacing on the behavior of preschool children. AV Communication Review, 25, pp. 158-166.

Anderson, D. R., & Lorch, E. P. (1983). Looking at television: Action or Reaction? In J. & Anderson, D. R. Bryant, (Ed.), Children's Understanding of Television: Research on Attention and Comprehension, pp. 1-33. New York: Academic Press.

Anderson, D., Lorch E., , Field, D., & Sanders, J. (1981). The Effects of TV program comprehensibility on preschool children's visual attention to television. Child Development, 52, 151-157.

Ball, S., & Bogatz, G. A. (1970). The First Year of Sesame Street: An evaluation. Princeton, NJ: Educational Testing Service.

Bandura, A. (1986). Social Foundations of Thought & Action: A Social Cognitive Theory. Englewood Cliffs, NJ: Prentice-Hall.

Christenson, P. (1983). How children read television: The levels of the game. In M. Mander, (Ed.), Communications in Transition, pp. 242-259. New York: Praeger.

Collins, W. A. (1983). Interpretation and inference in children's television viewing. In J. & Anderson, D. R. Bryant, (Ed.), Children's Understanding of Television: Research on Attention and Comprehension, pp. 125-150. New York: Academic Press.

Dorr, A. (1980). When I was a child, I thought as a child. In S. Withey & R. Abeles, (Ed.), Television and Social Behavior: Beyond Violence and Children. Hillsdale, NY: Erlbaum.

Dorr, A. (1983). No shortcuts to judging reality. In J. Bryant

& D. Anderson, (Ed.), Children's Understanding of Television: Research on Attention and Comprehension. New York: Academic Press.

Fernald, A. (1985). Four-year-old infants prefer to listen to motherese. Infant Behavior and Development, 8, 181-195.

Fernald, A., & Kuhl, P. (1987). Acoustic determinants of infant preference for motherese speech. Infant Behavior and Development, 10, 279-293.

Josephson, W. L. (1987). Television violence and children's aggression: Testing the priming, social script, and disinhibition predictictions. Journal of Personality and Social Psychology, 53, 882-890.

Lang, A. (1990) Involuntary attention and physiological arousal evoked by structural features and mild emotion in TV commercials. Communication Research, 17, 3, 275-299.

Lang, A. and Thorson, E. (1989) The effects of television videographics and lecture familiarity on adult cardiac orienting responses and memory. Paper presented to the International Communication Association, San Francisco, CA, May. Top three paper.

McLeod, J. M., Fitzpatrick, M. A., Glynn, C. J., & Fallis, S. F. (1982). Television and social relations: family influences and consequences for interpersonal behavior. In D. Pearl, 1. Bouthilet, & J. Lazar, (Ed.), Television and Social Behavior: Ten Years of Scientific Progress and Implications for the Eighties, Vol. II, pp. 272-286.

McLuhan, M. (1964). Understanding media: The extensions of man. New York: Signet.

Pingree, S. (1986). Children's activity and television comprehensibility. Communication Research, 13, 239-256.

Roberts, D. F., & Bachen, C. M. (1981). Mass communication effects. Annual Review of Psychology, 32, 307-356.

Rushton, J. P. (1982). Television and pro-social behavior. , II. In D. & Bouthilet, L. Pearl, (Ed.), Television and Behavior: Ten Years of Scientific Progress, pp. 248-257. Rockville, MD: NIMH.

Sullivan, J. W., & Horowitz, F. D. (1983). The effects of intonation on infant attention: The role of rising intonation contour. Journal of Child Language, 10, 521-534.

Worth, S., & Gross, L. (1974). Symbolic Strategies. Journal of Communication, 24, 27-39.

TABLE #1: Sample Description

DEMOGRAPHIC	WSU(N=58)	HERMOSA(N=20)
Gender of Subjects:		
Male	21	12
Female	36	
Age of Subjects(R=0-6):		
<1	0	8
1	3	9
2	11	3
3	19	0
>4	24	0
Age of Mother:		
20-25	5	4
25-30	16	5
30-35	26	10
35-40	8	1
40+	0	0
Age of Father:		
20-25	1	2
25-30	17	3
30-35	16	6
35-40	17	7
40+	2	2
Income:		
Low	24	5
Low-middle	28	8
Upper Middle	5	7
High	1	0
Ethnicity:		
White	40	14
Asian	13	2
Other	4	4
Marital Status:		
Married	42	16
Divorced	9	0
Never Married	5	2
Other	1	2
Education of Mother:		
Less than high school	0	0
High school graduate	2	0
Some college	22	4
College graduate	14	6
Some graduate school	11	3
Advanced degree	9	7

DEMOGRAPHIC	WSU(N=58)	HERMOSA(N=20)
Education of Father:		
Less than high school	2	0
High school graduate	2	0
Some college	11	4
College graduate	5	3
Some graduate school	9	0
Advanced degree	23	13
Primary Caretaker:		
-Most of caretaking-		
Mom	40	9
Dad	4	0
-Half of caretaking-		
Mom	13	11
Dad	29	17
-Hardly any caretaking-		
Mom	1	0
Dad	9	2
Most Comfortable Around:		
Men	2	1
Women	12	2
No difference	43	17

TABLE #2: Sample Messages

Message Type	Difficulty	Example
Poetry	Simple	I'll tell you the story of Jimmy Jet- And you know what I tell you is true. He loved to watch his TV set Almost as much as you.
Poetry	Hard	Burly, dozing humble-bee, Where thou art is clime for me. Let them sail for Porto Rique, Far-off heats through seas to seek;
Story	Simple	This is George. He lived with his friend, the man with the yellow hat. He was a good little monkey and was always very curious.
Story	Hard	One of the most difficult problems in regression analysis often is the selection of the set of independent variables to be employed in the model.
How to	Easy	These are the things you must do to get ready for bed. After you eat dinner and after you play, you need to brush your teeth.
How to	Hard	Before you can use your new disks for storing information, you must first format them. To format a disk you put the disk in the drive, shut the door...
Weather	Simple	The sun make the grass green and the flowers grow. The bumble bees are buzzing and the pretty butterflies are flying.
Weather	Hard	The Southeast wind chill has caused the temperature to drop into the negative numbers. For this time of the year the humidity is at an all time high...

TABLE #3: Message Order

	Presentation Orders		Message Content			
	Order 1	Order 2	Mediation	Gender	Topic	Difficulty
	1	17	Real	Man	Poetry	Simple
M	2	18	Mediated	Woman	Story	Hard
E	3	19	Mediated	Man	How to	Simple
S	4	20	Real	Woman	Weather	Hard
S	5	21	Mediated	Woman	Weather	Hard
A	6	22	Real	Man	How to	Simple
G	7	23	Real	Woman	Story	Hard
E	8	24	Mediated	Man	Poetry	Simple
	9	25	Mediated	Man	Story	Simple
	10	26	Real	Woman	Poetry	Hard
	11	27	Real	Man	Weather	Hard
	12	28	Mediated	Woman	How to	Simple
	13	29	Real	Woman	How to	Hard
	14	30	Mediated	Man	Weather	Simple
	15	31	Mediated	Woman	Poetry	Simple
	16	32	Real	Man	Story	Hard
	17	1	Real	Man	How to	Simple
	18	2	Mediated	Man	Poetry	Hard
	19	3	Real	Man	Weather	Simple
	20	4	Mediated	Woman	Story	Simple
	21	5	Real	Man	Story	Simple
	22	6	Mediated	Woman	Weather	Simple
	23	7	Real	Woman	Poetry	Simple
	24	8	Mediated	Man	How to	Simple
	25	9	Mediated	Woman	Poetry	Hard
	26	10	Real	Man	How to	Hard
	27	11	Mediated	Man	Story	Hard
	28	12	Real	Woman	Weather	Simple
	29	13	Mediated	Man	Weather	Hard
	30	14	Real	Woman	Story	Simple
	31	15	Mediated	Woman	How to	Hard
	32	16	Real	Man	Poetry	Hard

Figure 1
Main Effect for Gender of Speaker

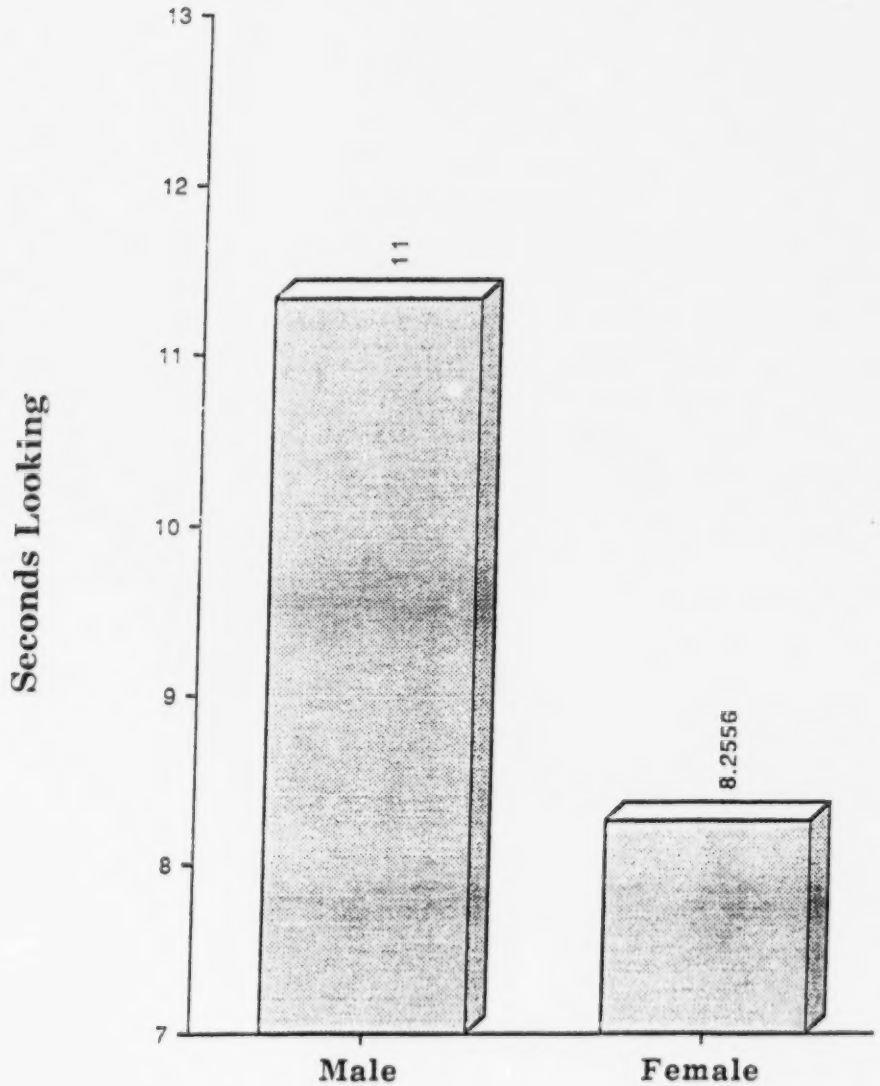

Figure 2
Main Effect for Gender of Child

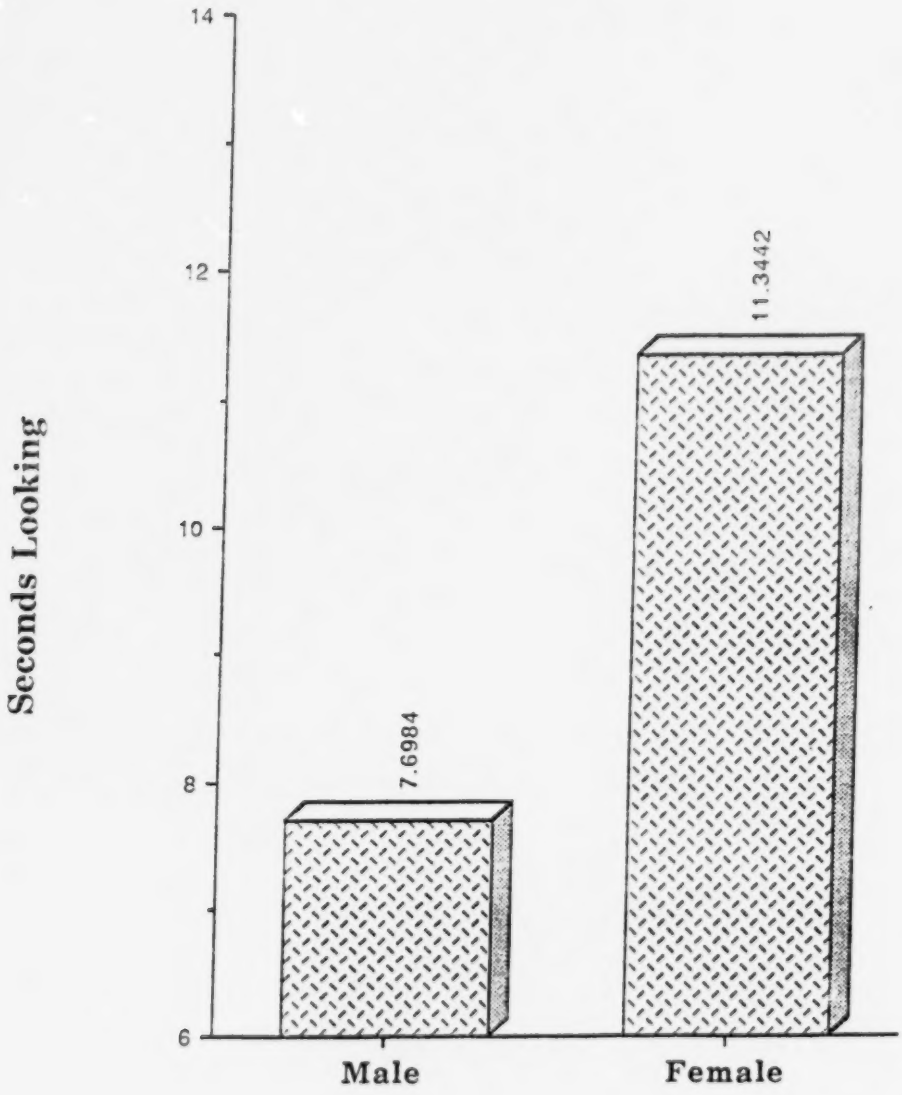

Figure 3a
Difficulty x Gender of Speaker Interaction
Dependent Variable is Attention

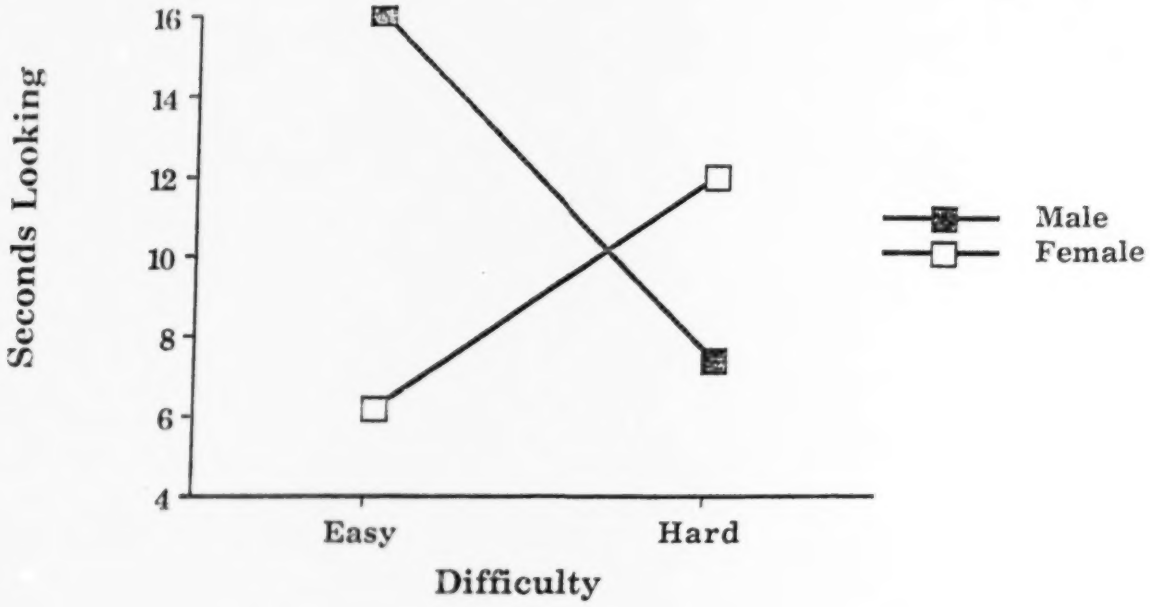

Figure 3b
Difficulty x Gender of Speaker Interaction
Dependent Variable is Involvement

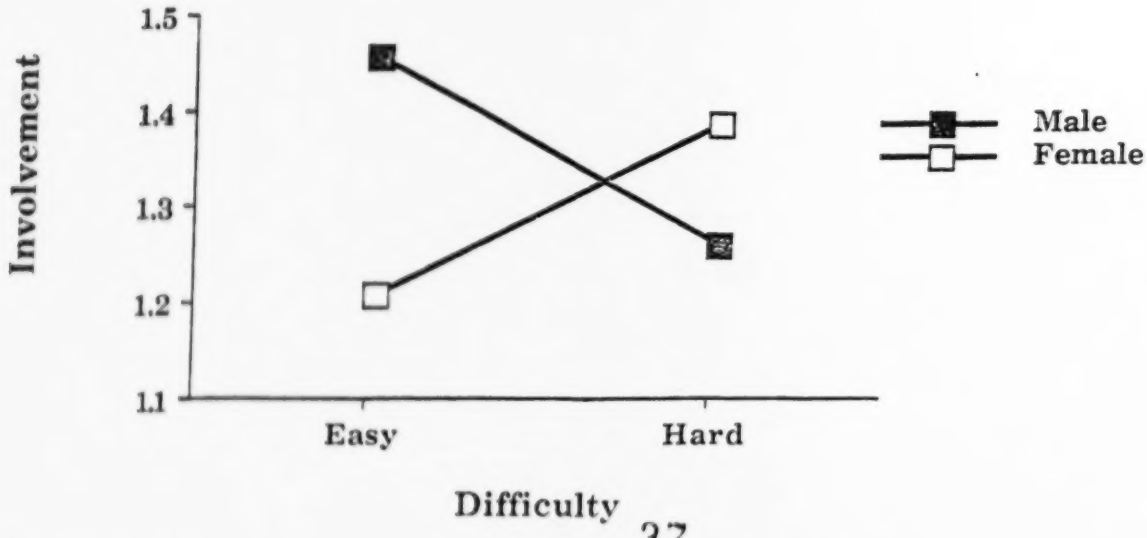

Figure 4a
Gender of Speaker x Type of Message
x Difficulty of Message Interaction
Dependent Variable is Attention

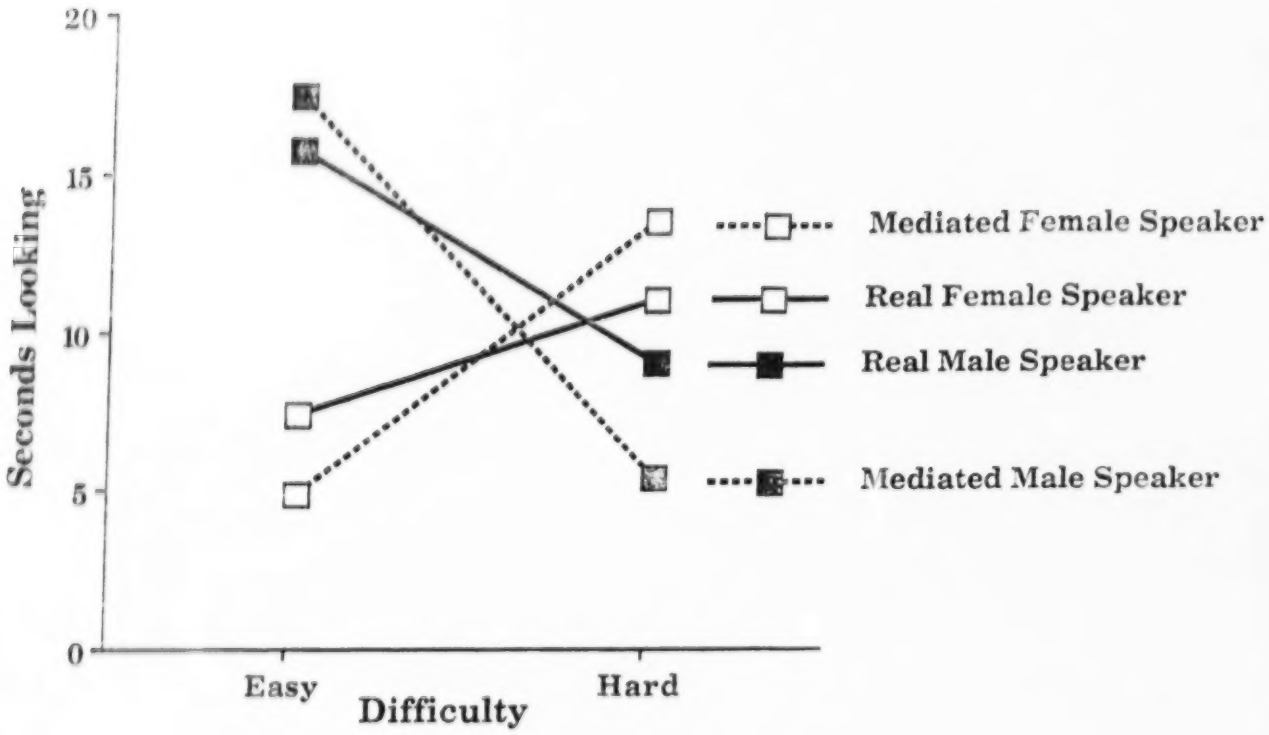

Figure 4b
Gender of Speaker x Type of Message
x Difficulty of Message Interaction
Dependent Variable is Involvement

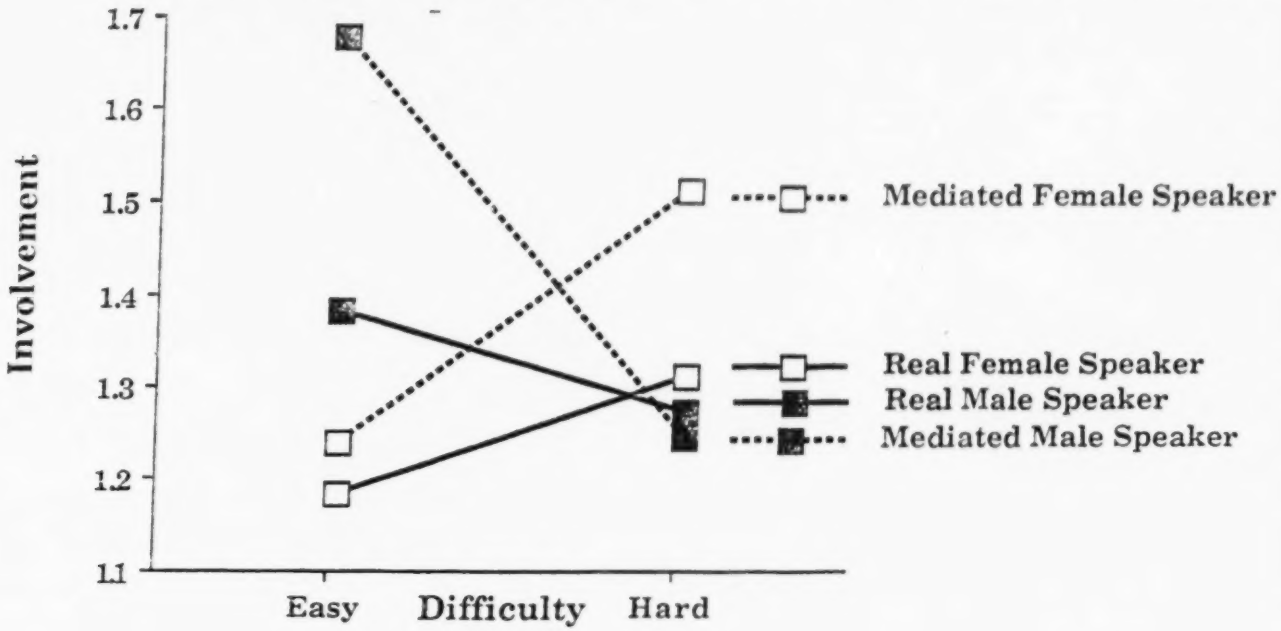

Figure 5
Age x Gender of Speaker Interaction

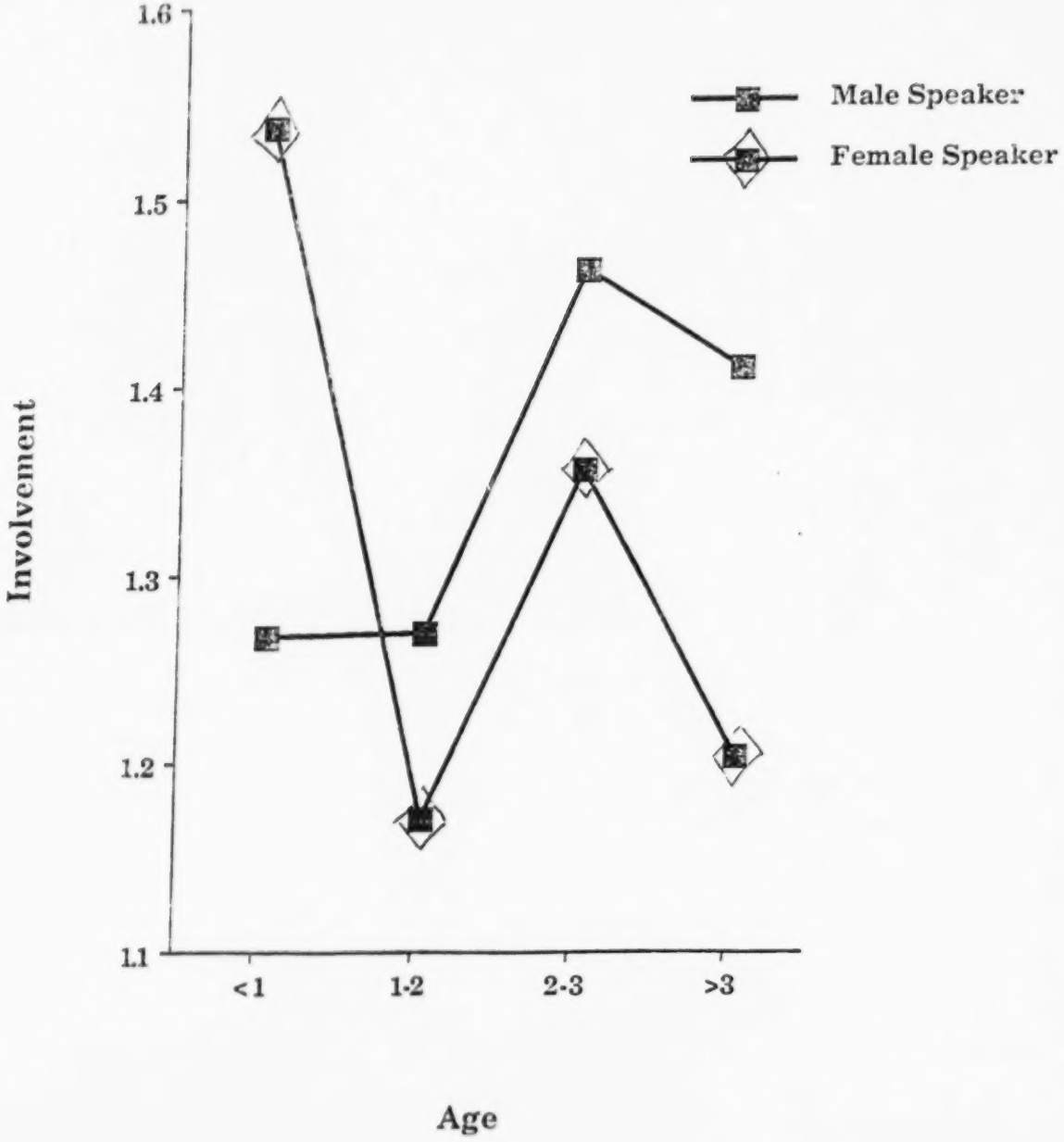

Figure 6
Age x Mediation of Message Interaction